

**AMENDMENTS TO THE CLAIMS**

1. (Currently amended) A producing method of a semiconductor device, ~~characterized by~~ comprising:

a film thinning ~~step of thinning~~ a silicon oxide film by heating the silicon oxide film formed after a surface of a silicon substrate is etched by chemical liquid, and

a one of thermal oxidizing ~~step of~~ by heating the thinned silicon oxide film to oxidize the silicon oxide film by gas including at least oxygen, ~~or a~~ and plasma oxidizing ~~step of oxidizing~~ the thinned silicon oxide film by plasma discharged gas including at least oxygen.

2. (Currently amended) A producing method of a semiconductor device as recited in claim 1, ~~characterized in that~~ wherein in the film thinning step, the silicon oxide film formed after the etching is carried out is processed at 800°C or higher.

3. (Currently amended) A producing method of a semiconductor device as recited in claim 2, ~~characterized in that~~ wherein in the film thinning step, the silicon oxide film formed after the etching is carried out is processed at 800°C to 1000°C.

4. (Currently amended) A producing method of a semiconductor device as recited in any one of claims 1 to 3, ~~characterized in that~~ wherein

in the film thinning step, the silicon oxide film formed after the etching is carried out is processed under a reduced pressure.

5. (Currently amended) A producing method of a semiconductor device as recited in claim 4, ~~characterized in that~~ wherein the reduced pressure is 266 Pa to 2660 Pa.

6. (Currently amended) A producing method of a semiconductor device as recited in claim 4, ~~characterized in that~~ wherein in the film thinning step, the silicon oxide film formed after the etching is carried out is processed by nitrogen.

7. (Currently amended) A producing method of a semiconductor device as recited in claim 6, ~~characterized in that~~ wherein in the film thinning step, the silicon oxide film formed after the etching is carried out is processed for 5 seconds to 60 seconds.

8. (Currently amended) A producing method of a semiconductor device as recited in any one of claims 1 to 3, ~~characterized by~~ further comprising:  
a plasma nitriding ~~step of nitriding~~ the silicon oxide film by plasma discharged gas including at least nitrogen to form a silicon oxynitride film, wherein

a dose amount of nitrogen of the silicon oxynitride film is made to be  $1 \times 10^{15}$  [atoms/cm<sup>2</sup>] or higher by the plasma nitriding step.